



## | TCW4 ANALOG

### ANALOG ABSOLUTE MULTI-TURN MODULAR SENSOR

Sensata-BEI Sensors' TCW4 sensors provide absolute multi-turn measurement with analog outputs in an over-molded, two-part modular design that offers flexibility and protection from the environment.



#### Features

- With its two-part design, the TCW4 absolute multi-turn offers maximum flexibility for installation
- Rugged and excellent resistance to shock and vibration
- Robust, proven magnetic technology
- Environmentally resistant, IP 67 standard (IP69K option)
- Extended operating range from -20° C to 85° C
- Uses universal supply 11 to 30 VDC – Analog output
- Available Resolution up to 12 bits per turn with up to 16 bits of turns counting
- Variety of magnet holders available

#### Applications

- Factory Automation
- Process Automation



## SPECIFICATIONS

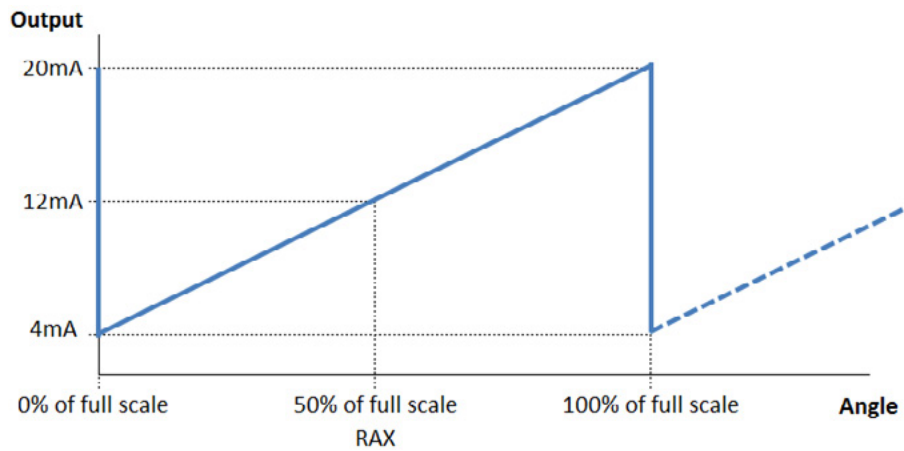
### Mechanical

<b>Terminations</b>	PUR cable with M12 5 pin connector
<b>Housing</b>	Macromelt PA638
<b>Weight</b>	0,150 kg

### Electrical

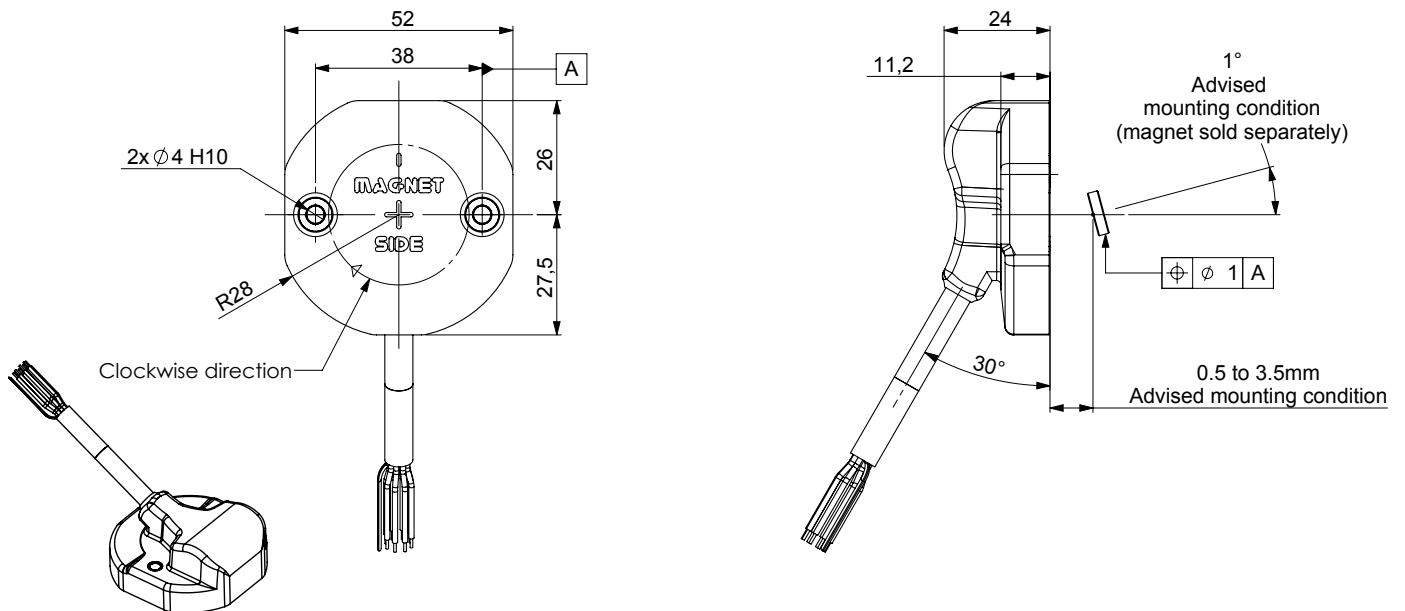
<b>Electrical Angle</b>	3600°
<b>Output Function</b>	0– 10 Vdc, 0.5 to 4.5 Vdc, or 4 – 20 mA
<b>Minimal Cycle Time</b>	1ms
<b>Resolution</b>	Multi-turn, 12 bits per turn with up to 16 bits of turns counting
<b>Accuracy</b>	+/-0.3% on 360°
<b>Repeatability</b>	+/-0.1% on 360°
<b>Supply Voltage</b>	11 - 30 Vdc or 15-30 Vdc
<b>Start-up</b>	< 1s
<b>Response time</b>	< 10 ms (5L2 and 3L1 electronics), <1ms (All other electronics)
<b>Recommended Load</b>	> 10 kOhms (voltage out), 500 Ohms (current out)
<b>Current Requirements</b>	< 40mA
<b>Protection</b>	Overvoltage Protection: Yes Reverse Polarity Protection: Yes Short Circuit Protection: Yes
<b>EMC</b>	IEC 61000-4-2 Electrostatic discharge (ESD) 4 kV, 8 kV IEC 61000-4-3 Electromagnetic fields 10 V/m (80MHz - 1GHz), 3V/m (1.4GHz - 2GHz), 1V/m (2GHz - 2.7GHz) IEC 61000-4-4 Electrical fast transients (burst) 1 kV IEC 61000-4-6 Conducted disturbances, induced by RF-fields 10 Veff.

## Typical Output (4 - 20 mA shown)



## DIMENSIONS

All Dimensions are in millimeters.  
Shaft system with magnet to be ordered separately (see Accessories).



## CONNECTIONS

Function	Vcc	0V	Analog Out	RAZ Reset	Direction	Ground
Color	Brown BN	White WH	Green GN	Blue BU	Red RD	Shield



## NOTES

Stray magnetic fields can interfere with accuracy and repeatability of the signal.



# ORDERING OPTIONS

Example : TCW4\_00//3L13//03600//L3R020

(Contact the factory for special versions, ex : dimensions, connections... )

<b>Family</b>	TCW4	00	//	3L1	3	//	03600	//	L3	R020
<b>TCW4:</b>	Absolute Multi-turn Sensor									
<b>Shaft Ø</b>										
<b>00:</b>	Modular									
<b>Supply / Output Stage</b>										
<b>3L1:</b>	15 to 30 Vdc, 0-10V Output									
<b>5L2:</b>	11 to 30 with 0.5 to 4.5 Vdc Output									
<b>3L3:</b>	15 to 30 Vdc, 4 – 20 mA Output									
<b>Direction</b>										
<b>3:</b>	with direction input									
<b>Range</b>										
<b>03600:</b>	3600° range									
<b>Connection</b>										
<b>L3:</b>	3 conductor PVC cable									
<b>Connection Orientation</b>										
<b>R020:</b>	Radial cable 2m long									

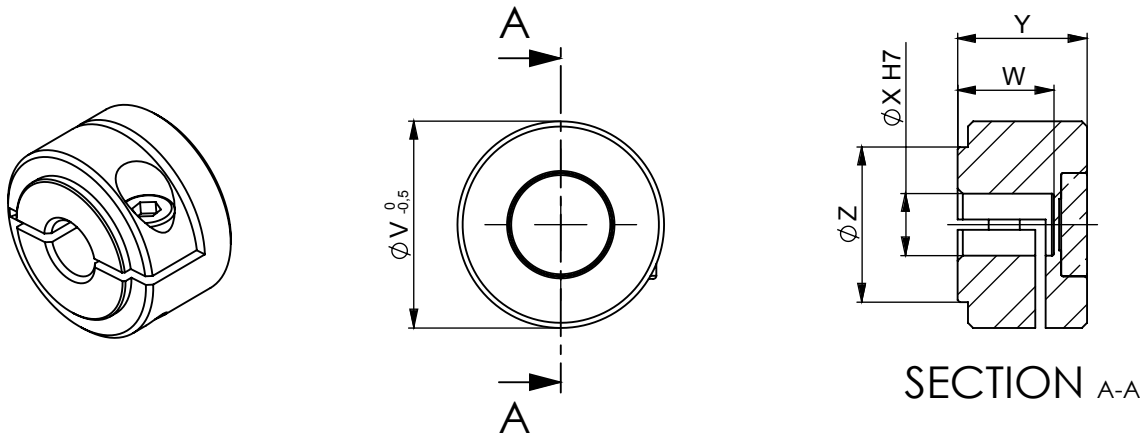


# ACCESSORIES

## Female magnet support + Magnet 8810/013

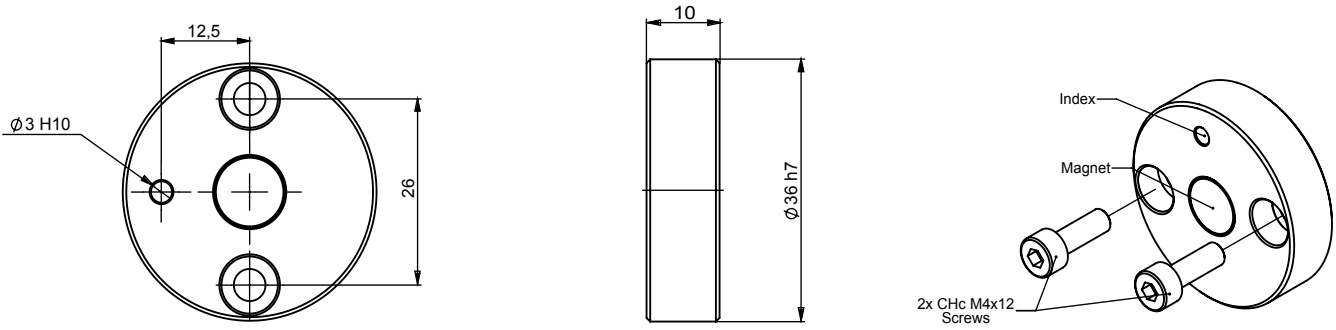
Ordering p/n : **M9105/Kxx**

KXX: Where XX is the shaft mounting diameter in mm. Standards are 06, 08, 10, 11, and 14 mm. i.e M9105/K10 mounts to a 10 mm shaft.

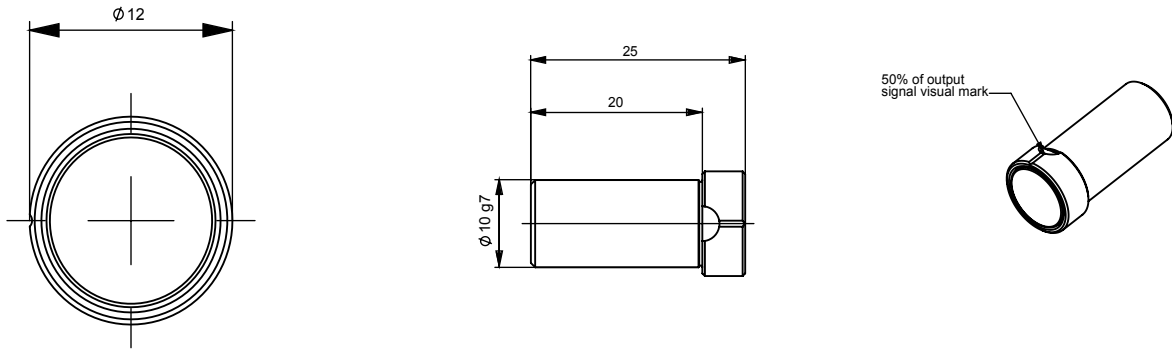


	M9105/K06	M9105/K08	M9105/K10	M9105/K11	M9105/K14
<b>W</b>	6 H7	8 H7	10 H7	11 H7	14 H7
<b>X</b>	20	20	26	26	29
<b>Y</b>	12,5	12,5	14	14	14
<b>Z</b>	15	15	15	15	18

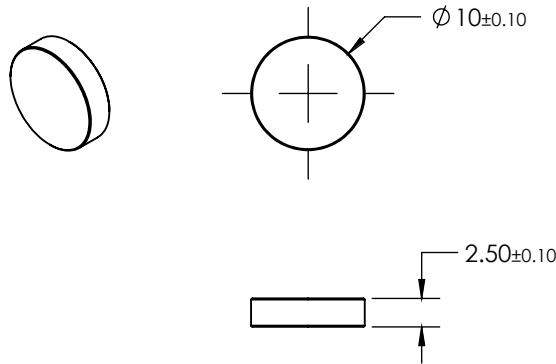
**Frontal magnet support + Magnet 8810/013**  
 Ordering p/n : **M9105/F26**



**Male magnet support + Magnet 8810/013**  
 Ordering p/n : **M9105/M10-01**



**Magnet**  
 Ordering p/n : **8810/013**



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Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

**CONTACT US**

**Americas**

+1 (800) 350 2727  
[sales.beisensors@sensata.com](mailto:sales.beisensors@sensata.com)

**EMEA**

[position-info.eu@sensata.com](mailto:position-info.eu@sensata.com)  
 +33 (3) 88 20 8080

**Asia Pacific**

[sales.isasia@list.sensata.com](mailto:sales.isasia@list.sensata.com)  
 China +86 (21) 2306 1500  
 Japan +81 (45) 277 7117  
 Korea +82 (31) 601 2004  
 India +91 (80) 67920890  
 Rest of Asia +886 (2) 27602006  
 ext 2808